

Title: Understanding Urban Seismic Risk Around the World

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Hazard examined: Earthquakes

Study emphasis: Economic development and risk assessment and management strategies.

Summary: Offers a comprehensive assessment of earthquake risk and the state of risk management in each participating city included in the study. Sixty-five city profiles are provided which include a brief physical and historical overview of each city, an outline of previous and existing risk management and mitigation strategies employed at the site and a detailed analysis of the city's earthquake disaster risk.

Vulnerability Indicators: None listed

Economic Development, Disaster Preparedness, Disaster Response and/or Disaster Reconstruction Application: Economic Development, Disaster Preparedness

Data Requirements: 31 scalar indicators to assess risk of earthquake disaster; survey questions and case studies of risk management efforts made to reduce city's risk

Output:

- Systematic comparative assessment of the magnitude, causes, and ways to manage earthquake risk in cities worldwide.
- Final report includes:
 - a. Summary comparison of earthquake risk and its contributing factors (Hazard, Exposure, Vulnerability, External Context, Emergency Response & Recovery Capability), and state of risk management in participating cities.
 - b. For each participating city, a two-page profile of the city's earthquake risk, its causes, and efforts undertaken to reduce it (see attached example).
 - c. Compilation of 65 case studies describing risk management efforts made in the participating cities using a consistent format (see attached example).

- Worldwide network of earthquake professionals.

Results of Application at Case Study Site: Several efforts have grown out of the study, including the following:

- El Salvador reps. used results to raise awareness of risk in their city. Hosted meeting of local decision makers, in which project results were presented and used as framework for discussion of risk and how to manage it.
- Omar Cardona of Bogota, Colombia and Dora Roitman of San Juan, Argentina are developing similar indexes to compare the regions within their city and province, respectively.
- Following the Izmit, Turkey earthquake in August 1999, GeoHazards International (GHI) used the database of information from the project to help interpret the significance of the event in a press release it made.
- GHI is also continuing to develop and expand application of the earthquake risk index concept by exploring various models, data gathering techniques, and uses.
- GHI and a city representative from India are considering developing a similar index for rural areas.
- I am developing a similar index comparing hurricane risk of counties in the U.S.-- ultimately, the indexes could be multi-hazard.

Lessons Learned:

- The internet enabled this truly global project.
- Local participation was important. City representatives were enthusiastic and offered a lot of valuable input.
- Even seemingly simple data are sometimes difficult to obtain in some cities.
- A systematic, comparative assessment of earthquake risk can be useful for raising the awareness of earthquake risk among local officials and the public, and for resource allocation among cities (or similar jurisdictions). The project results can be helpful both in providing the final risk-based rankings and in offering a framework for systematic discussion of the issues associated with earthquake risk and risk management.

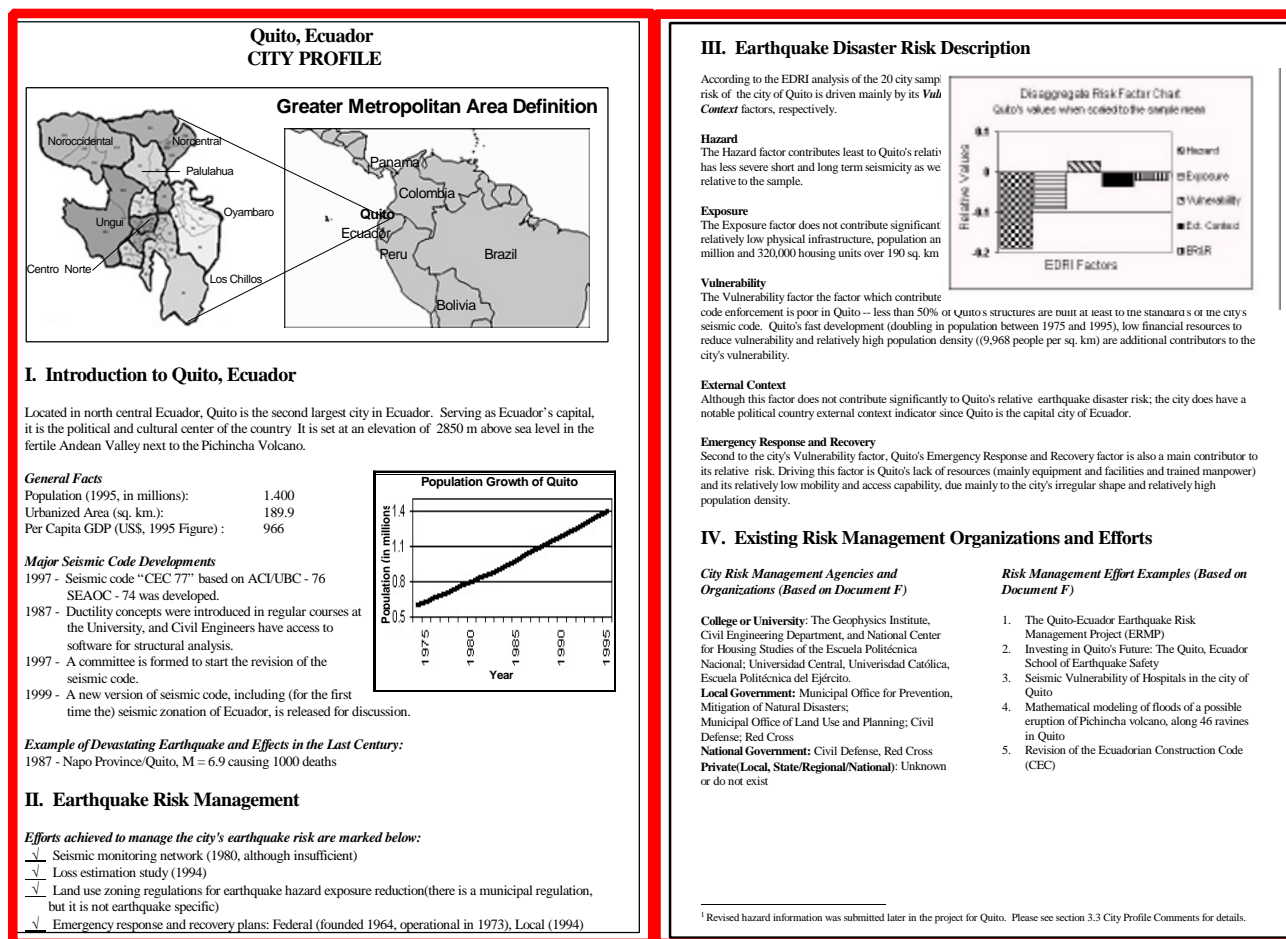


Figure 1. Example of a city profile.

- 1. Name of Project:** Revision of the Ecuadorian Construction Code (ECC)
- 2. Description:** Eight sub-committees have been integrated to revise and update the ECC which accounts for local seismological, geological, soils and materials conditions. Funds are available to develop the first chapter, related to a seismic zonation of the country and the definition of the design spectra.
- 3. Effort Maker(s):** Technicians of six universities in the country.
- 4. Targeted Recipient(s):** Since the purpose is to reduce the seismic vulnerability of new construction, the target groups are the architects, structural engineers, designers, constructors, construction material providers, municipalities in charge of authorizing the constructions.
- 5. Targeted Need(s):** Infrastructure vulnerability
- 6. Form of Implementation:** Start the revision of the code and promote its enforcement
- 7. Level of Implementation:** Countrywide
- 8. Evaluation of Success:** Cannot be established yet, but it could be seen as a success for the fact that it is a multi-disciplinary and inter-institutional effort
- 9. Contact Information:**
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Figure 2. Example of a risk management case study.